UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,492	11/24/2003	Tracy Fulghum	4015-5133	4554

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EXAMINER
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ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-6,8,9,11-13,15-17 and 19-89* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-6,8,9,11-13,15-17 and 19-89* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

1.   This office action, in response to the amendment filed 6/29/2007, is a final office

action.

Response to Arguments

2.   Applicant's arguments with respect to claims 1, 2, 4-6, 8, 9, 11-13, 15-17 and 19-

89 have been considered but are moot in view of the new grounds of rejection.

3.   The previous rejection of the claims under 35 USC 112, first paragraph is

withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public
use or on sale in this country, more than one year prior to the date of application for patent in the United
States.

4.   Claims 1, 4, 5, 12, 16, 20, 21, 28, 31-35, 40, 44-52, 58, 62-68, 71, 74-79, 81-85,

87 and 89 are rejected under 35 U.S.C. 102(b) as being anticipated by Papasakellariou

(US 2001/0053177).

Regarding claims 1, 5, 12, 16, 20, 32-35, 40, 44-46, 48-51, 58, 77, 78, 83, 84 and

89, Papasakellariou discloses a spread spectrum receiver with correlating coprocessor

having code cross-correlations for efficient interference cancellation (abstract). The

correlation coprocessors are used for code search and despreading in rake reception

(paragraph 0020). The interference effect after despreading is proportional to the code

cross-correlations of the interfering and desired signals. For non-zero cross-correlations, the interfering signals have a non-zero effect on the decision statistics of the desired signals. The contribution of each interferer on the decision statistic of the desired signal can be removed if in addition to the previous information, the code cross-correlations are computed (paragraph 0009). The code cross-correlations are multiplied by each interfering signal's complex amplitude and information symbol. The result is subtracted from the output of the despreader for the desired signal (paragraph 0009).

Regarding claim 4, the vector datapath operates on a set of N chips in parallel (paragraph 0020).

Regarding claims 21, 28, 31, 67, 68, 71 and 74-76, Papasakellariou discloses a spread spectrum receiver with correlating coprocessor having code cross-correlations for efficient interference cancellation (abstract). The correlation coprocessors are used for code search and despreading in rake reception (paragraph 0020). The interference effect after despreading is proportional to the code cross-correlations of the interfering and desired signals. For non-zero cross-correlations, the interfering signals have a non-zero effect on the decision statistics of the desired signals. The contribution of each interferer on the decision statistic of the desired signal can be removed if in addition to the previous information, the code cross-correlations are computed (paragraph 0009). The code cross-correlations are multiplied by each interfering signal's complex amplitude and information symbol (paragraph 0009). Therefore, the code cross-correlation is weighted by the interfering signal's complex amplitude. The result is subtracted from the output of the despreader for the desired signal (paragraph 0009).

Regarding claims 47, 52, 62-66, 79, 81, 82, 85 and 87, Papasakellariou discloses

the code cross-correlations are multiplied by each interfering signal's complex amplitude

and information symbol (paragraph 0009). Therefore, the code cross-correlation is

weighted by the interfering signal's complex amplitude. The result is subtracted from the

output of the despreader for the desired signal (paragraph 0009).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 2, 6, 8, 9, 11, 13, 15, 17, 19, 22-27, 29, 30, 36-39, 41-43, 53-57, 59-61,

69, 70, 72, 73, 80, 86 and 88 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Papasakellariou (US 2001/0053177) in view of Eberhardt et al (US

5,754,583).

Regarding claims 2, 6, 13, 17, 22, 29 and 53, Papasakellariou discloses the

receiver and method of using the receiver as stated above. Papasakellariou does not

disclose the rake receiver generates estimated channel coefficients. Eberhardt

discloses a rake finger generates a weighted channel estimate (column 10, lines 43-63).

The channel estimate improves performance of the receiver by reassigning the fingers

to more accurately recover the transmitted signal (column 10, line 64 to column 11, line

21) in a communication system where fading occurs. For this reason, it would have

been obvious for one of ordinary skill in the art at the time of the invention to combine

the teachings of Eberhardt into the receiver and method of using the receiver of

Papasakellariou.

Regarding claims 8, 24 and 25, Papasakellariou discloses a spread spectrum

receiver with correlating coprocessor having code cross-correlations for efficient

interference cancellation (abstract). The correlation coprocessors are used for code

search and despreading in rake reception (paragraph 0020). The interference effect

after despreading is proportional to the code cross-correlations of the interfering and

desired signals. For non-zero cross-correlations, the interfering signals have a non-zero

effect on the decision statistics of the desired signals. The contribution of each interferer

on the decision statistic of the desired signal can be removed if in addition to the

previous information, the code cross-correlations are computed (paragraph 0009). The

code cross-correlations are multiplied by each interfering signal's complex amplitude

and information symbol (paragraph 0009). Therefore, the code cross-correlation is

weighted by the interfering signal's complex amplitude. The result is subtracted from the

output of the despreader for the desired signal (paragraph 0009). Papasakellariou does

not disclose the rake receiver comprising a multi-channel filter to reduce intersymbol

interference. Eberhardt discloses a finite impulse response (FIR) filter 200 for the use in

the mobile station 100 for providing low pass filtering (column 8, lines 36-42). The filter

200 uses a number of delay elements, multipliers and a summer to output the filtered

signal. Filter 200 is found in each finger (figure 1). It would have been obvious for one of

ordinary skill in the art at the time of the invention to utilize the filter of Eberhardt in the

receiver and method of using the receiver of Papasakellariou. The filter will allow unwanted components of the received signal to be removed and will allow the originally transmitted signal to be recovered correctly.

Regarding claims 9 and 26, Papasakellariou does not disclose the rake receiver generates estimated channel coefficients. Eberhardt discloses a rake finger generates a weighted channel estimate (column 10, lines 43-63). The channel estimate improves performance of the receiver by reassigning the fingers to more accurately recover the transmitted signal (column 10, line 64 to column 11, line 21) in a communication system where fading occurs. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Eberhardt into the receiver and method of using the receiver of Papasakellariou.

Regarding claims 11 and 27, figure 2 of Eberhardt discloses the filter.

Regarding claims 15, 19, 23, 30, 36-39, 41-43, 54-57, 59-61, 69, 70, 72, 73, 80, 86 and 88, Papasakellariou discloses the receiver and method of using the receiver as stated above. Papasakellariou does not disclose the rake receiver comprising a multi-channel filter to reduce intersymbol interference. Eberhardt discloses a finite impulse response (FIR) filter 200 for the use in the mobile station 100 for providing low pass filtering (column 8, lines 36-42). The filter 200 uses a number of delay elements, multipliers and a summer to output the filtered signal shown in figure 2. Filter 200 is found in each finger (figure 1). It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize the filter of Eberhardt in the receiver and method of using the receiver of Papasakellariou. The filter will allow unwanted components of

the received signal to be removed and will allow the originally transmitted signal to be

recovered correctly.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-

3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin M. Burd
11/19/2007

KEVIN BURD
PRIMARY EXAMINER